Environment Conservation Journal 19 (1&2)103-105, 2018
ISSN 0972-3099 (Print) 2278-5124 (Online)
Abstracted and Indexed

Effect of different photoperiods on the longevity of male and female Moth of Eri silkworm (*Philosamia ricini)* L. (Saturniidae: Lepidoptera)

Yadav Ulka [1] and Jadhav Neeta [2] ✉

Received: 15.10.2017 **Revised: 10.01.2018** **Accepted: 08.02.2018**

Abstract

The effect of different photoperiods on longevity of male and female of Eri silkworm (*P.ricini*) was carried in P.G. Madhav Vigyan Mahavidhyalay, Ujjain (MP). The Eri silkworms reared under the exposure of different experimental photoperiods G1 (12L:12D),G2 (LL), G3 (10L:14D), G4 (08L;16D), G5 (05L:19D) and G6 (DD), at temperature (25±2ºC) and relative humidity (75±5%).The longevity of male and female moths were maximum in G3 and minimum in G2, complete light.

Keywords: Ericulture, photoperiods, longevity, Philosamia ricini, sericulture

Introduction

According to Chowdhary, 2006 Silk is a natural protein fiber which made by protein and secreted by Lepidopteran silkworms arthropods. In comparison of other fiber it is soft, smooth but strong and durable than artificial fiber. Ericulture is a conventional tribal inhabited industry in the bucolic area. The Ericulture occupies the prime position surrounded by poverty-stricken communion. It is like a cotton and soft like a silk with the woolen properties. Eri silkworm produces Eri silk, its zoological name is Philosamia ricini which has a peculiar feature along with other three silkworms of having its potential host, the Castor (*Ricinus communis*) an important agricultural oil bearing crop. Ricinus communis (castor) is the basic food plant for this Eri silkworm Devaiah *et al.,* 1985 Nutrition value of castor affects its productivity and development (Solanki and Joshi, 2001). Light and darkness are a major environmental influence in the lives of many animals, including invertebrates. Attraction to emitted light One of the most obvious effects of artificial lighting is that it attracts many nocturnal insects and some other invertebrates. Like all organism insects are also evolved in daily periodicity of dominated environment conditions. Various different levels showed by them at physiological rhythms and at various behavioral levels. Some circadian rhythms are found in insect at individual level while some are not found at individual level.

Author's Address
[1]Prof. and Head, Department of Zoology &Biotechnology, Govt. Girl's P.G. College Ujjain (MP)
[2] Govt. P. G. Madhav Science College, Ujjain (MP)
E-mail.: *ulka.yadav@gmail.com*

Material and Methods

The present study was carried out in the Department of Zoology, Government P. G. Madhav Vigyaan College, Ujjain (MP). Department has a well-established and equipped Sericulture Laboratory.

Disease free laying of Eri Silkworm (*Philosamia ricini*) were collected from Sericulture Rearing Centre Indore (M.P.).The temperature and relative humidity were maintained at 25±2ºC and 75±5%respectively. Rearing was done in the prevailing climatic condition and standard tray rearing method was adopted as recommended by Choudhary *et al.,* 1982. For the photoperiodic adjustment in rearing room, we took six rearing trays and five of them were covered with thick paper and black cloth while a tray was prepared for control group and during experiment we used five trays with zero watt bulbs were used and maintained their intensity of light to 20 lux. The lux (symbol Lx) is the SI derived unit of luminance and

Copyright by ASEA
All rights of reproduction in any form reserved

luminous emittance, measuring luminous flux per unit area. We placed DFLs under the six experimental different photoperiods like:
G1- Control (12L: 12D)
G2- Rearing in complete light (LL)
G3- Rearing in 10h light and 14h darkness (10L: 14D)
G4- Rearing in 08h light and 16h darkness (08L: 16D)
G5- Rearing in 05h light and 19h darkness (05L: 19D)
G6- Rearing in complete darkness (DD). Statistical method of student t-test and analysis of variance were done for level of significance.

Table 1. Effect of different photoperiod on the longevity of male and female moth of Eri Silkworm (*Philosamia ricini*).

Group	Photoperiod (hours)	Male Longevity± SE (days)	Female Longevity± SE (days)
G1 (control)	12L:12D	8.00±0.199	10.00±0.031
G2	LL	6.50±0.158	7.50±0.019
G3	10L:14D	9.00±0.158	11.00±0.031
G4	08L:16D	8.75±0.002	10.5±0.019
G5	05L:19D	8.5±0.031	9.75±0.001
G6	DD	7.25±0.001	8.50±0.031

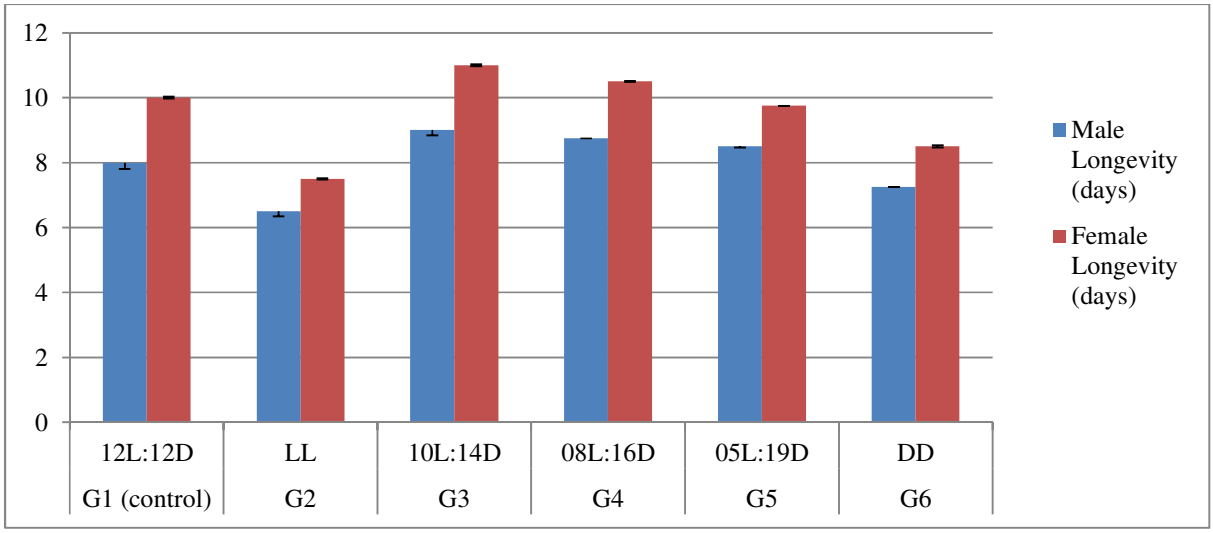

Figure1. Effect of different photoperiod on the longevity of male and female moth of Eri Silkworm (*Philosamia ricini*) Value=Mean±SE

Results and Discussion

The present study revealed that photoperiods have significant effect on longevity of male and female moth of Eri silkworm. During the present study the longevity of male and female moths were maximum in G3 (10L:14D) which is most suitable photo regime for longevity of male moth of Eri silkworm (*Philosamia ricini*). During the present studies the longevity of male moths were maximum in G3 (9.00±0.158) which is significantly higher than G1 (8.00±0.199) and minimum in G2 (6.50±0.158) which is significantly lower. As well as the longevity of female moths were maximum in G3 (11.00±0.031) which is significantly higher than G1 (10.00±0.031) and minimum in G2 (7.50±0.019) which is significantly lower. Female moth lived longer than male moth. In present study

both results are very close to the work of Rao, 1986 in his study the average longevity of male moths of Eri silkworm recorded was maximum in 16h light followed by complete darkness and the longevity of female moth was recorded to be maximum on 16h light followed by 4h light and complete darkness.
Above results are in close with the work of Rajana, 1986. He explained that longevity of both male and female moth of *C. ricini* was found maximum at complete dark and LD 04:20h of photoperiod. Irrespective of photoperiods and races the female moth lived longer than that of male moth.

References

Chowdhary, S.N. 2006. Host plants of Eri silkworm (Samia ricini Boiduval): Their distribution economic and prospects for exploitation. In: Proceeding of National workshop on Eri food plants, pp.-28-37, Guwahati.

Choudhary SN, 1982. Eri silk industry, Published by *Directorate of sericulture and Weaving Government of Assam*. p 16-25.

Devaiah, M.C., Rajashekhargouda, R., Suhas, Y. and Govindan, R. 1985. Growth and silk production in *Samia cynthia ricini* Boisduval as fed on four different host plants. ***Ind.J. Seril*** 24: 33-35

Rao RK, 1986. Response of Silkworm, *Samia cynthia ricini* (Boisduval) (Lepidoptera: Saturniidae) to photpperiod. Thesis of department of Sericulture, *University of Agricultural Science Bangalore*.

Rajanna SP, 1986. Effect of Photoperiod on Silkworm, *Bombyx mori* (Linn) (Lepidoptera: Bombycidae). Thesis of University of Agricultural Science

Solanki, S.S. and Joshi, P. 2001. Inheritance study of some morphological traits in castor (*Ricinnus communis L.*). ***Ind. J. Genet.*** *61:136-139.*